



Promoting Gummy Guyabano (*Anona muricata* Linn.) Candy

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Received 13 March 2015 Accepted 30 October 2015 (*Corresponding Author)

Abstract Guyabano fruit is from guyabano tree “*Anone muricate*”, a small tree, native to Central America, the Caribbean, and South America, Guyabano can also be found in Mexico, Colombia, Brazil, Peru, and Venezuela, and sub-Saharan African countries. The tree is adaptable to tropical climate and is currently cultivated for its fruits in most Southeast Asian countries such as Malaysia, Indonesia, and the Philippines. Guyabano tree is usually 5 to 7 meters tall, with characteristics of fruit bearing, broadleaf, flowering, and evergreen trees. Guyabano or soursop is known to fight cancer, diabetes mellitus, and other illnesses. It is nutritious, as it is high in carbohydrates, particularly significant amount of fructose, vitamin C, vitamin B1, and vitamin B2. With the mentioned benefits of Guyabano, the author is motivated to come up with a product that allows convenient consumption, availability, and attractiveness for all ages of consumers. In this study, the author ventured into producing a type of candy by using pulp of Guyabano fruit. The study sought to determine the candy’s acceptability and promoted its utilization to rural community. The study also identified shelf life and marketability of the product. This study is an experimental research using four-point hedonic scale in rating its acceptability in overall preference, appearance, texture, scent, taste, and aftertaste. A total of 100 participants rated the product consisted of 65 students and people from rural communities and 35 faculty members. The result showed that both faculty and community members had the same descriptive rating, in five attributes: overall preference, appearance, texture, taste and aftertaste; however, they was a difference in their ratings for scent attribute; students rated only Like while the faculty members rated Like Very Much for this attribute. It was also found that the product was marketable and could last for a month. It can be concluded that Gummy Guyabano Candy is acceptable and can be prepared in the community because of the availability of ingredients, tools and equipments and easy to follow procedures.

Keywords Guyabano, candy, gummy, Hedonic Tasting, sensory attributes

INTRODUCTION

Guyabano fruit can be called in several names such as soursop, custard apple, graviola, and guyabano. Its scientific name is “*Annona muricata*.” It is a green, pear-shaped fruit covered with soft spines. Matured guyabano or soursop fruit weighs about 2 to 5 kilograms. It is ovoid and can be up to 18 centimeters in length. With thin skin and soft edible whitish fleshy and fibrous pulp, Guyabano black seeds are inedible. It has a distinctive sweet-sour flavor that tastes like pineapple and strawberry with a tang of sour citrus taste.

Guyabano trees bear fruits in 3 - 5 years after planting. They flower most months of the year but the peak period is in May and June, and the fruits ripen in November and December.

It is one of the minor crops that is gaining popularity because of its economic uses and great demand in processing industry, especially in producing guyabano drinks. The crop is now gaining its prospect in the world market, therefore, expansion and more production should be encouraged to meet its demand. (bpi.da).

Guyabano is widely known to possess medicinal properties like cancer fighting, diabetes mellitus herpes inhibiting, anti-depressive, anti-bacterial, effect against Staph aureus and Vibrio cholera (Tesio, 2013).

Guyabano is a nutritious fruit, rich in ascorbic acid, potash, phosphorous and calcium. The edible portion is 70% with food energy of 63 calories and sugar content ranges from 4 to 14%. It is high in carbohydrates, particularly fructose. The fruit also contains significant amounts of vitamin C, vitamin B1, and vitamin B2 (Barrette, 2013). Because of the health benefits, it has been on high demand from consumers. Restaurants and hotels sell them raw or as fresh ripe fruit as dessert or a snack item in a form of juice or shake. The green fruits are consumed as vegetable or used for meat sweetening. Its juice is used for flavoring ice cream, sherbet, canning and for preparation or refreshing drinks. It may also be processed into preserved food such as candy, jam, and jelly.

The researcher intends to introduce Guyabano to community in an easy and convenient way. The method also includes preserving the fruits in a form of candy that can be consumed anytime and anywhere, without a concern of fruiting season. preserve the fruit after its fruiting month by preparing it into a candy so that anybody can readily take healthy guyabano fruit comfortably anytime and anywhere.

Candy is a type of sweets or lollies, a confection that features sugar as a principal ingredient. Unlike sweet pastries served as a dessert course at the end of a meal, candies are normally eaten casually, often with fingers or as a snack between meals. Each culture has its own ideas of what constitutes candy rather than dessert. The same food may be considered a candy in one culture and a dessert in another.

Candy is also a source of empty calories, because it provides little or no nutritional value beyond food energy. At the start of the 20th century, when undernutrition was a serious problem, especially among poor and working-class people, and when nutrition science was a new field, the high calorie content was promoted as a virtue. Researchers suggested that candy, especially candy with milk and nuts, was a low-cost alternative to normal meals (Labau, 2012). This study aims to produce a candy with Guyabano fruit, to have a finished product with is increased nutritional value.

In this study, gelatine is added to make the candy more gummy and more appetizing to the consumers at all ages. According to LaBau (2013), gummy candies are made with a base of gelatine and are often flavoured with fruit juices or extracts. Gelatine gives them a distinctive chewy texture that ranges from soft to very firm, depending on the amount of gelatine used.

Gelatine is a protein obtained by boiling skin, tendons, ligaments, and/or bones with water. It is usually obtained from cows or pigs. Gelatine is used as a thickener for puddings (such as Jell-O), candies, marshmallows, cakes, ice cream, and yogurts. In this study, gelatine is mixed with guyabano fruit pulp, so that the finished candy is more nutritious, and therefore can be used as alternative food to normal meals (Cunningham, 2013).

OBJECTIVES

This study ventured to produce gummy candy from the pulp of Guyabano fruit. It sought to identify the ingredients, tools, and equipment to be used in producing the candy, and discover procedures which are easy to follow. Further, the study sought to determine its acceptability in terms of overall preference, appearance, texture, scent, taste, aftertaste, shelf life, and marketability. This study was conducted at the Food Technology Laboratory of Bohol Island State University main campus of Academic Year 2013-2014.

METHODOLOGY

This is an experimental study where the products are subjected to sensory appraisal. According to Walker (2004), sensory appraisal is a scientific discipline used to evoke, measure, analyze, and interpret reactions to those characteristics of food and materials as they are perceived by the senses of sight, smell, taste, touch, and hearing. The product of this study was subjected to sensory analysis. A total of 100 participants rated the product, 35 of them were teachers and instructors of Food Technology, Technology and Livelihood Education, which were considered as experts in the field; and 65 were students and people from rural community, acting as consumers of the product. After preparing the candies, the finished candies were given to the two groups of participants to test the product. A sensory score sheet of four point hedonic scale was utilized by the participants in rating the product using the following numerical rating and descriptions: 1-Dislike Very Much, 2- Dislike, 3-Like, and 4- Like Very Much. For purposes of analysis, the following ranges and descriptions were also used: 1.00-1.75, Dislike Very Much; 1.76- 2.51, Dislike; 2.52 – 3.27, Like; and 3.28 – 4.00, Like Very Much.

RESULTS AND DISCUSSION

Ingredients, Tools and Equipment

Gummy Guyabano Candy was produced by mixing together 2 cups of blended Guyabano pulp, 1 cup of unflavored gelatine, 2 cups of centrifugal sugar, and 2 tablespoons of glucose.

The candy was prepared with the use of a blender, a mixing bowl, a measuring cup, a measuring spoon, a rubber scraper, a wooden ladle, a carajay pan, and a stove. It was prepared by washing the ripe Guyabano fruit, separating skins and seeds, and blending the fruit pulp. In a mixing bowl, fruit pulp, unflavored gelatine, and centrifugal sugar were mixed. The mixture was transferred to a carajay pan and was cooked under moderate heat. When caramelization was almost reached, glucose was then added until the caramelization stage was attained.

Table 1 manifests that the faculty group rated the product as Like Very Much in all sensory attributes with the average numerical rating of 3.52. Among the six sensory attributes, after taste attribute got the highest rating of 3.77, which was Like Very Much. It was followed by taste and overall attributes, the preference results showed a numerical rating of 3.57 and 3.54, respectively; which all were described as Like Very Much. Texture attribute was rated at 3.37. Although, it showed the lowest rating the descriptive rating was still in the Like Very Much range. The faculty group did not like the chewy characteristics of the product.

The students and rural community group gave the product an overall rating of 3.45 with a descriptive rating of Like Very Much. Taste attribute got the highest rating of 3.69. It could be noted that in this candy artificial flavoring was not added so the taste, which the respondents felt, was the natural taste of the fruit. It could be deduced that the respondents liked the sour taste of Guyabano as it was apparent in the finished product. Taste attribute was followed by aftertaste attribute, which had overall preference with numerical ratings of 3.66 and 3.55, respectively. Normally, characteristics of aftertaste attribute are quality, intensity, and duration. Quality describes the actual taste of the food, intensity conveys the magnitude of that taste, and duration describes how long the aftertaste of that food lasts. Foods that have lingering aftertastes typically have long sensation durations. In this study, the taste of the product lingered longer making respondents rate high in aftertaste attribute. The three sensory attributes, which were taste, aftertaste, and overall preference received a descriptive rating of Like Very Much. This result indicated that the product was really acceptable. On the other hand, scent attribute was rated at 3.17 described as Like. This showed that the respondents did not like the smell of the Guyabano which was very evident in the product. Aside from the rating of 3.17 which was the

lowest rating but still under the descriptive rating of like in the scent attribute, the participants commented that they did not like the smell of the finished candy. Usually good food and smell are inextricable bound to one another. The product of the study although rated very high in taste, aftertaste, and overall preference and was rated low in scent. It did not imply that the finished product was not good but only the respondents did not like the natural smell of the Guyabano.

Talking about the appearance of the finished product, the respondents rated Like Very Much. The appearance of a food or beverage influences crave ability and acceptance, before the product touches the lips (Berry, 2013). This is because “we eat with our eyes before we ever smell or taste” (Shelke, 2010). Visual appeal is why chefs put so much time and effort into plate presentation. “Color and appearance serve to entice the consumer” (Brown, 2012). The product of the study was molded into heart and flower shapes in bite size with golden brown color, which the researcher believed to be the factors that influenced the rating of the respondents. They liked the size, the color, and the form of the product. It can be gleaned that product characteristics like color, size, and form could attract and of course effected the judgment of the respondents in rating product appearance. When the ratings of two groups were combined, the overall rating of Gummy Guyabano Candy was 3.49 or Like Very Much, despite the low rating of Like in the scent attribute given by the students and community group, which had no effect on the entire rating of the candy.

Table 1 Participants’ rating of the product

Sensory attributes	Faculty		Community		Overall rating	
	Rating	Description	Rating	Description	Rating	Description
Overall Liking	3.54	Like Very Much	3.55	Like Very Much	3.55	Like Very Much
Appearance Liking	3.43	Like Very Much	3.38	Like Very Much	3.40	Like Very Much
Texture Liking	3.37	Like Very Much	3.30	Like Very Much	3.33	Like Very Much
Odour Liking	3.49	Like Very Much	3.17	Like	3.33	Like Very Much
Taste Liking	3.57	Like Very Much	3.69	Like Very Much	3.63	Like Very Much
Aftertaste Liking	3.77	Like Very Much	3.66	Like Very Much	3.72	Like Very Much
Overall Rating	3.53	Like Very Much	3.46	Like Very Much	3.49	Like Very Much

Shelf Life of the Product

In testing the product shelf life, the product had been placed in room temperature for two months and daily observations on the product were done and properly recorded. It was observed that the changes in the product took place on the thirtieth day where molds were found. It could be declared that the product could be good for human consumption for a month. The occurrence of molds in the product indicated that it was no longer good to be eaten. According to Dr. Kung’u (2013), foods or feeds contaminated with mold are risky and should be avoided at all times, eating such foods could result food poisoning due to mycotoxin or bacterial contamination, or both.

Marketability

The product was potentially marketable because when it was displayed in an elementary school, all was consumed in three days for three consecutive weeks. It was sold at two pesos per piece, a bit expensive compared to other candies that were two pesos for three pieces or fifty centavos for each piece.

CONCLUSION

It can be concluded that Gummy Guyabano Candy can be produced by the rural community as a value added product of Guyabano fruit. It is easy to prepare since the ingredients are locally available in the locality; the tools and equipment are also simple which can be found in kitchen of ordinary households; the preparing procedures are easy to follow. It can be safely concluded that Gummy Guyabano Candy is generally acceptable.

RECOMMENDATION

It is recommended that the product be introduced to local community through the extension function of the university. Since the product contains gelatine, this is not good for vegetarians. There is an alternative chance of marketed gelatine for vegetarians called “agar agar”, which is derived from a type of seaweed. Candy can be moulded into smaller size because bigger size can cause choking to smaller children who might wish to eat the candy.

ACKNOWLEDGMENT

This undertaken research comes into fruition with a kind assistance from Bohol Island State University administration, faculty members, and Food Technology students. In particular, the researcher is grateful to Dr. Elpidio T. Magante, CE, Ed.D., University President, for the permission and warm support in the conduct of the study. Acknowledgement is likewise given to the Campus Director Dr. Nelson M. Patena and Mrs. Anelsa B. Sumalinog, the research assistant.

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